

**Final
Site-Specific Field Sampling Plan Attachment
Site Investigation at the Trenches West of Iron Mountain
Road, Parcel 500(7)**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

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List of Acronyms

ADEM	Alabama Department of Environmental Management
bgs	below ground surface
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Procedure
COC	chain of custody
COPC	chemical(s) of potential concern
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
NGVD	National Geodetic Vertical Datum
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
SVOC	semivolative organic compound
TAL	target analyte list
TCL	target compound list
TOC	total organic carbon
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture

List of Acronyms *(Continued)*

UXO	unexploded ordnance
VOC	volatile organic compound
VSI	visual site inspection
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Trenches West of Iron Mountain Road, Parcel 500(7) at Fort McClellan (FTMC), Calhoun County, Alabama, to determine the presence or absence of potential site-specific chemicals at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Trenches West of Iron Mountain Road, Parcel 500(7).

The Trenches West of Iron Mountain Road, Parcel 500(7), is located in the southeast-central area of the Main Post. The site is approximately 200 feet west of the intersection of 23rd Street with Iron Mountain Road. The system of trenches extends approximately 200 feet long by approximately 50 feet wide. This system of trenches were discovered by Alabama Department of Environmental Management and confirmed by IT during a site reconnaissance visit to the Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7) (located just south of the trenches).

Specifically, IT will collect 6 surface soil samples, 6 subsurface soil samples, and 3 groundwater samples at this site. Potential contaminant sources at the Trenches West of Iron Mountain Road, Parcel 500(7) site may include petroleum products, solvents, metals and explosives. However, there is not any information as to what activities were conducted at this site or what potential site-specific chemicals (PSSC) may exist at this site. Chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, metals and nitroexplosives. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines. Also, IT will excavate 3 locations in the trenches with a shovel and/or a posthole digger to determine if fill material exists in the trenches.

The possibility of unexploded ordnance (UXO) exists at Trenches West of Iron Mountain Road, Parcel 500(7); therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at the Trenches West of Iron Mountain Road, Parcel 500(7). The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) for the Trenches West of Iron Mountain Road, Parcel 500(7), will be used in conjunction with the site-

specific safety and health plan (SSHP), the WP, and the installation-wide sampling and analysis plan (SAP). The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

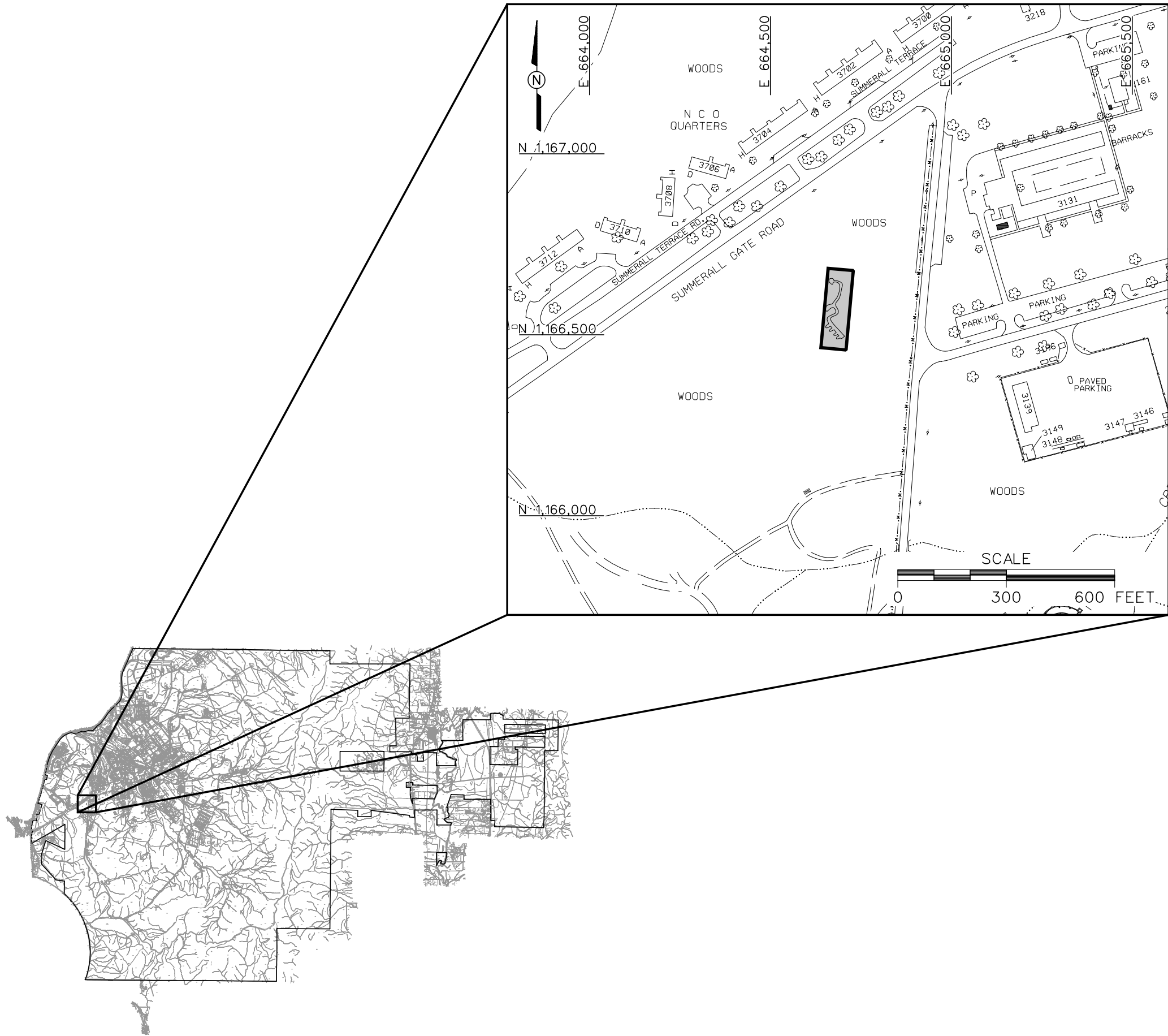
The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Trenches West of Iron Mountain Road, Parcel 500(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Trenches West of Iron Mountain Road, Parcel 500(7). This SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Trenches West of Iron Mountain Road, Parcel 500(7), and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP). Site-specific hazard analyses are included in the SSHP.

1.2 Site Description

The Trenches West of Iron Mountain Road, Parcel 500(7) is located in the southeast-central area of the Main Post (Figure 1-1). The site is approximately 200 feet west of the intersection of 23rd Street with Iron Mountain Road (Figure 1-2). The system of trenches extends approximately 200 feet long by approximately 50 feet wide. This system of trenches was discovered by Alabama Department of Environmental Management and confirmed by IT during a site reconnaissance visit to the Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7) (located just south of the trenches). Potential contaminant sources at the Trenches West of Iron Mountain Road, Parcel 500(7), may include petroleum products, solvents, metals and explosives. However, there is not any information as to what activities were conducted at this site or what potential site-specific chemicals (PSSC) may exist at this site.

Trenches West of Iron Mountain Road, Parcel 500(7) falls within the “Possible Explosive Ordnance Impact Area” shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998). Therefore, IT will conduct unexploded ordnance (UXO) avoidance activities, including surface sweeps and downhole surveys of soil borings.

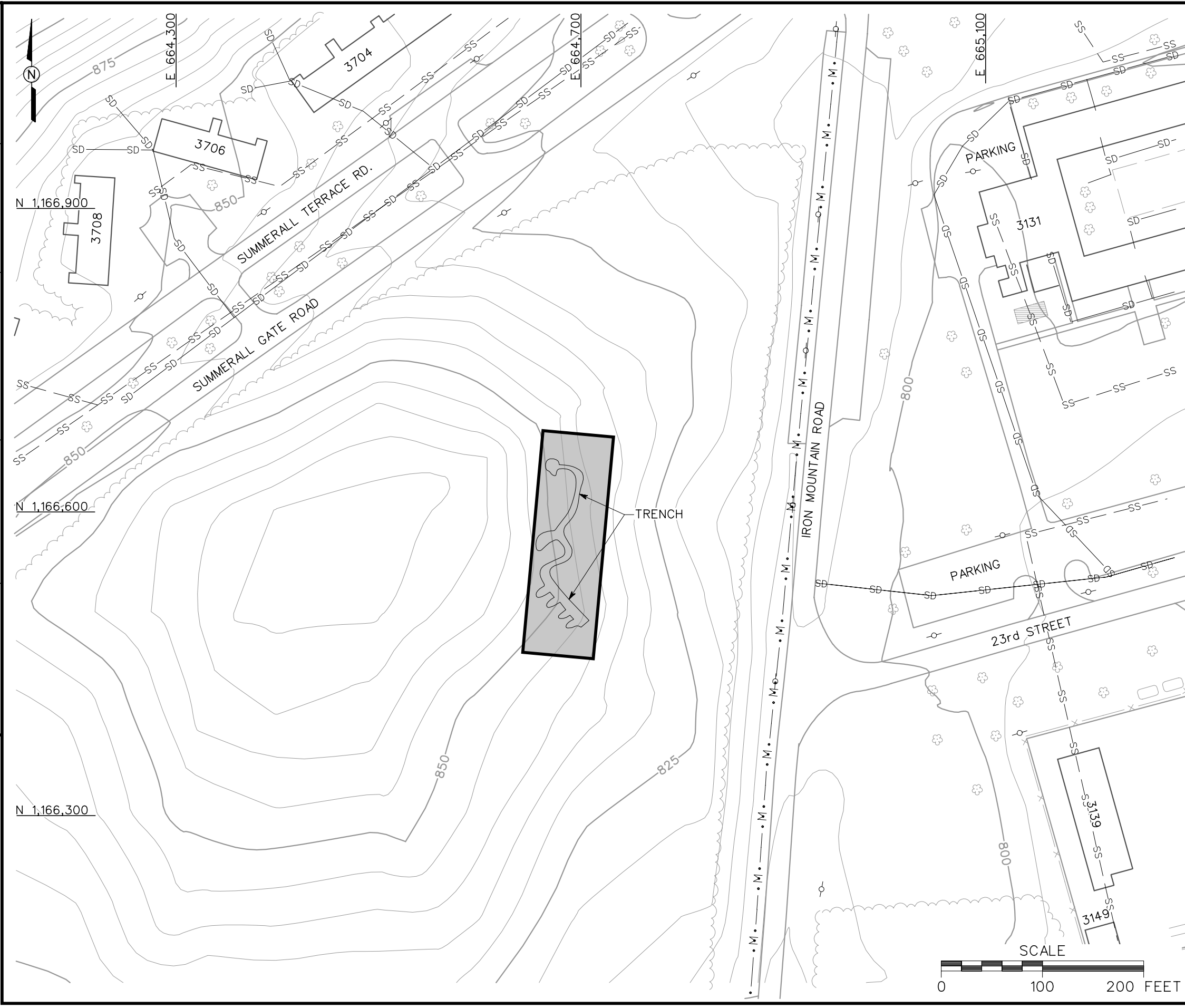


LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- FENCE
- UTILITY POLE

FIGURE 1-1
SITE LOCATION MAP
TRENCHES WEST OF IRON
MOUNTAIN ROAD
PARCEL 500(7)

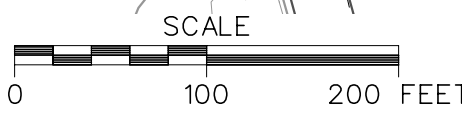
U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



- LEGEND
- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- TREES / TREELINE
- PARCEL BOUNDARY
- FENCE
- UTILITY POLE
- SANITARY SEWER LINE
- STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
TRENCHES WEST OF IRON
MOUNTAIN ROAD
PARCEL 500(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018



The elevation at the site ranges from approximately 820 feet to approximately 860 feet (National Geodetic Vertical Datum [NGVD] of 1929). The site slopes primarily from west to east. Surface water drains to the east. Local shallow groundwater direction at the site is probably controlled by topography; therefore, groundwater direction in the residuum is likely to the east.

Soils at the Trenches West of Iron Mountain Road site consist of soils of the Anniston and Allen Series. The Anniston and Allen Series of soils consists of strongly acid, deep well drained soils that have developed in old local alluvium. The parent material washed from the adjacent higher lying Linker, Muskingum, Enders, and Montevallo soils, which developed from weathered sandstone, shale, and quartzite. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil.

Soils at this site fall into the Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded (AcD2) (U.S. Department of Agriculture [USDA], 1961). These soils have strong slopes and thin solium with rapid runoff. Severely eroded benches and shallow gullies are common in many areas. These areas have a reddish-brown to dark-brown gravelly clay loam surface soil. Infiltration is slow. The depth to bedrock ranges from 2 feet to greater than 10 feet below ground surface (bgs). The typical soil description is 2 to 10 feet of well-drained stony loam to clay loam over stratified local alluvium; limestone or shale bedrock. The depth to the water table is likely greater than 20 feet bgs.

This mapping unit consists of friable soils that have developed in old alluvium on foot slopes and along the base of mountains. The color of the surface soil ranges from very dark brown and dark brown to reddish brown and dark reddish brown. The texture of subsoil ranges from light clay loam to clay or silty clay loam. The alluvium ranges in thickness from 2 to more than 8 feet. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high. Organic matter is moderately low.

1.3 Scope of Work

The scope of work for activities associated with the site investigation at the Trenches West of Iron Mountain Road, Parcel 500(7) site, as specified by the statement of work (USACE, 1999), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.

- Conduct a surface and near surface unexploded ordnance (UXO) survey over all areas to be included in the sampling effort.
- Provide downhole UXO support for all intrusive drilling to determine buried downhole hazards.
- Collect 6 surface soil samples, 6 subsurface soil samples and 3 groundwater samples to determine whether potential site-specific chemicals (PSSC) are present at the Trenches West of Iron Mountain Road, Parcel 500(7) and to provide data useful for supporting any future planned corrective measures and closure activities.
- Samples will be analyzed for the parameters listed in Section 4.5.
- Excavate 3 locations within the trenches with shovels and/or posthole diggers to determine if fill material exists.

The possibility of UXO exists at Trenches West of Iron Mountain Road, Parcel 500(7); therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at the Trenches West of Iron Mountain Road. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.

2.0 Summary of Existing Environmental Studies

An environmental baseline study (EBS) was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance for fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, Alabama Department of Environmental Management (ADEM), EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, VSIs were conducted to verify conditions of specific property parcels. There are not any records indicating any releases occurred at this site.

The Trenches West of Iron Mountain Road, Parcel 500(7) was identified as a Category 7 CERFA site. This CERFA site is a parcel where PSSCs were possibly stored, and released onto the site or to the environment, and/or were possibly disposed of on site property. There have not been any investigations recorded at the Trenches West of Iron Mountain Road, Parcel 500(7).

The Trenches West of Iron Mountain Road, Parcel 500(7), lack adequate documentation and, therefore, requires additional evaluation to determine the environmental condition of the parcel.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Trenches West of Iron Mountain Road, Parcel 500(7). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Trenches West of Iron Mountain Road, Parcel 500(7) site is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and the procedures necessary to meet the objectives of the SI and establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The available data, presented in Table 3-1, related to the SI at the Trenches West of Iron Mountain Road, Parcel 500(7) site have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual chemical contamination in site media.

Table 3-1

**Summary of Data Quality Objectives
Site Investigation
Trenches West of Iron Mountain Road, Parcel 500(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA, ADEM USACE, DOD FTMC, IT Corporation Other contractors, and possible future land users	None	<u>Contaminant Source</u> Unknown Trenches	<u>Surface soil</u>	SI to confirm the presence or absence of contamination in the site media	<u>Surface soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives	Definitive data in CESAS Level B data packages	6 surface soil samples + QC
		<u>Migration Pathways</u> Infiltration to subsurface soil, infiltration and leaching to groundwater, dust emissions and volatilization to ambient air	<u>Subsurface Soil</u>		<u>Subsurface Soil</u> TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives	Definitive data in CESAS Level B data packages	6 subsurface soil samples + QC
		<u>Potential Receptors</u> Groundskeepers (future) construction workers (future), and residents (future)	<u>Groundwater</u>	Definitive quality data for future decision making	<u>Groundwater</u> TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives	Definitive data in CESAS Level B data packages	3 groundwater samples + QC
		<u>PSSC</u> Petroleum products, solvents, explosives, and metals					

ADEM - Alabama Department of Environmental Management.
CESAS - Corps of Engineers South Atlantic Savannah.
DOD - U.S. Department of Defense.
EPA - U.S. Environmental Protection Agency.
FTMC - Fort McClellan.

PSSC - Potential site-specific chemical.
QC - Quality control.
SI - Site inspection.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.

TCL - Target Compound list.
TOC - Total organic carbon.
USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating potential risks to human health in the risk assessment. The CSEM includes all receptors and potential exposure pathways appropriate to all plausible scenarios. The CSEM facilitates consistent and comprehensive evaluation of risk to human health through graphically presenting all possible exposure pathways, including all sources, release and transport pathways, and exposure routes. In addition, the CSEM helps to ensure that potential pathways are not overlooked. The elements of a complete exposure pathway and CSEM are:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact scenarios with a contaminated source medium.

Primary contaminants are unknown, however, if releases occurred, the releases were probably limited to leaks and spills that entered surface soil. Significant potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, dust emissions and volatilization to ambient air, and surface water runoff and erosion to surface water and sediment.

Current site use is best described as open space industrial and may not be safe for public access until remediation has been completed because of the potential for UXO. Future use is likely industrial (FTMC, 1999). Plausible human health receptor scenarios addressed in the CSEM include:

- The resident scenario, although unlikely, is considered for future purposes only, because there are currently not any residents present at the site and likely future use is indicated to be industrial.
- The groundskeeper scenario is considered for future purposes, only. The area is not currently maintained, but will probably be maintained in the future.
- The construction worker scenario is considered for future purposes only, because the site is currently not under construction, but could undergo construction in preparing for, or during, future use(s) under the anticipated industrial site usage.

Human Health receptor scenarios excluded from the CSEM include:

- The recreational site user scenario is not considered because the area is limited in size and with a future industrial use planned, it is unlikely to be used for recreation.
- The venison and fish consumption scenarios are not considered since this area is not large enough to support substantive hunting activities and there is not any surface water to support fishing activities.

A summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways for this site is provided in Table 3-1 and Figure 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Trenches West of Iron Mountain Road site. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

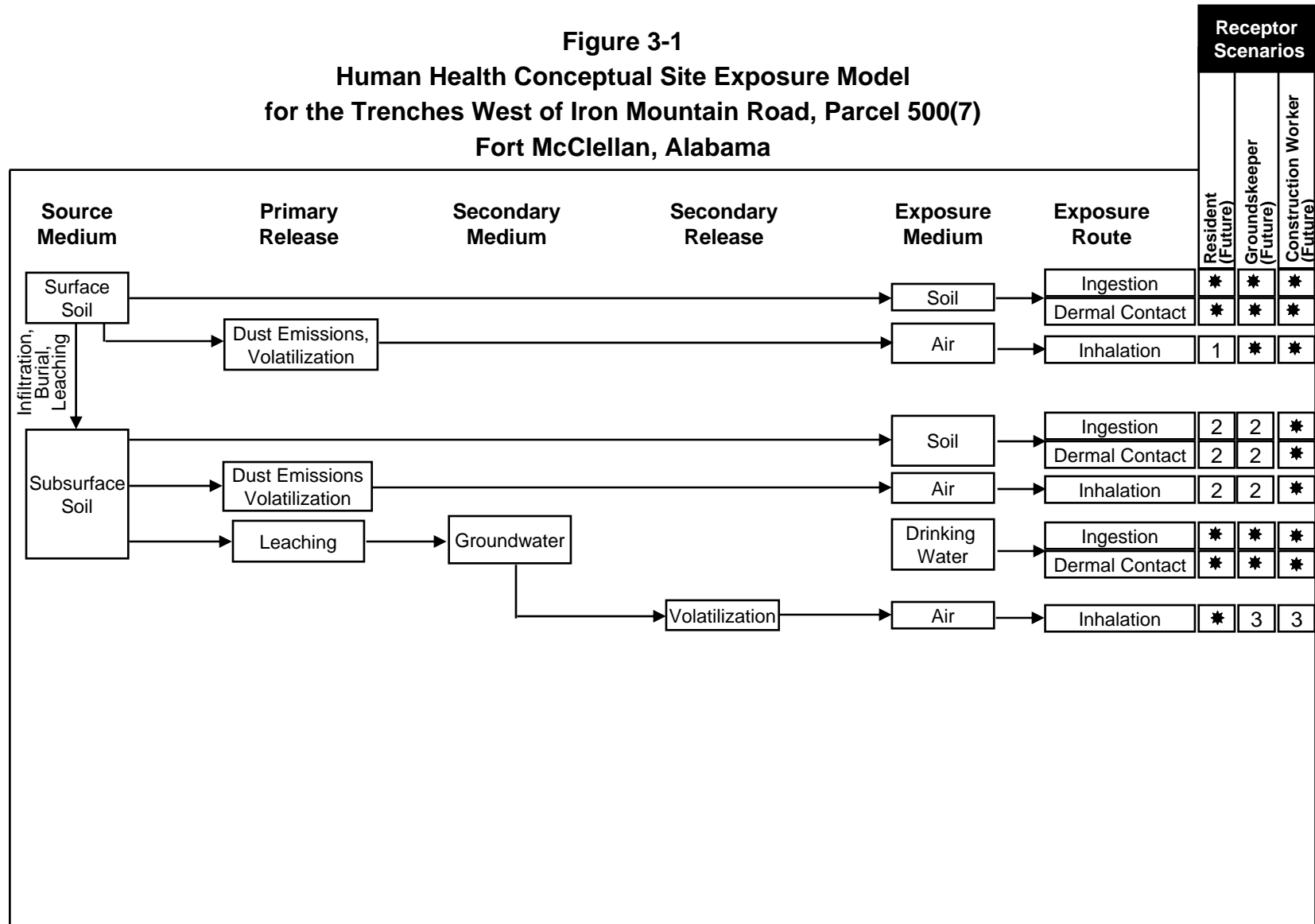
Confirmation of contamination at the Trenches West of Iron Mountain Road site will be based on comparing detected site chemicals of potential concern (COPC) to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting a feasibility study and risk assessment.

Assessment of potential ecological risk associated with sites or parcels will be addressed in accordance with the procedures outlined in the installation-wide work plan.

3.4.2 Data Types and Quality

Surface and subsurface soil, and groundwater will be sampled and analyzed to meet the objectives of the SI at the Trenches West of Iron Mountain Road, Parcel 500(7). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods Update III, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1
Human Health Conceptual Site Exposure Model
for the Trenches West of Iron Mountain Road, Parcel 500(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 UXO Survey Requirements and Utility Clearances

The Trenches West of Iron Mountain Road, Parcel 500(7), falls within the “Possible Explosive Ordnance Impact Area” shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998). Therefore, IT will conduct UXO avoidance activities, including surface sweeps and downhole surveys of soil borings.

4.1.1 Surface UXO Survey

An UXO sweep will be conducted over areas that will be included in the sampling and surveying activities to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for easy avoidance. Subsurface metallic anomalies will not be disturbed, and will also be marked for easy avoidance. UXO personnel requirements, procedures, and detailed descriptions of the geophysical equipment to be used are provide in Chapter 4.0 and Appendices D and E of the approved SAP (IT, 1998a).

4.1.2 Downhole UXO Survey

During the soil boring and downhole sampling, a downhole UXO survey will be performed to determine if buried metallic objects are present. UXO monitoring, as described in Chapter 4.0 of the SAP (IT, 1998a), will continue until undisturbed soils are encountered or the borehole has been advanced to 12 feet below ground surface, whichever is reached first.

4.1.3 Utility Clearances

After the UXO surface survey has cleared the area to be sampled and prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the FTMC installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are approved (for both UXO and utility avoidance) for intrusive sampling, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program at the Trenches West of Iron Mountain Road, Parcel 500(7), includes the collection of surface soil, subsurface soil and groundwater samples for chemical analyses. These samples will be collected and analyzed to provide data for characterizing the site to determine the environmental condition of the site and any further action to be conducted at the site.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected from six locations at the Trenches West of Iron Mountain Road site.

4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale is listed in Table 4-1. Proposed sampling locations are shown in Figure 4-1. Surface soil sample designations and required QA/QC sample requirements are summarized in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.1.2 Sample Collection

Surface soil samples will be collected from the upper 1 foot of soil by direct-push methodology as specified in Section 4.7.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Surface soil samples will be screened for information purposes only, and not to select samples for analysis. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from the six soil borings to be installed at the Trenches West of Iron Mountain Road site.

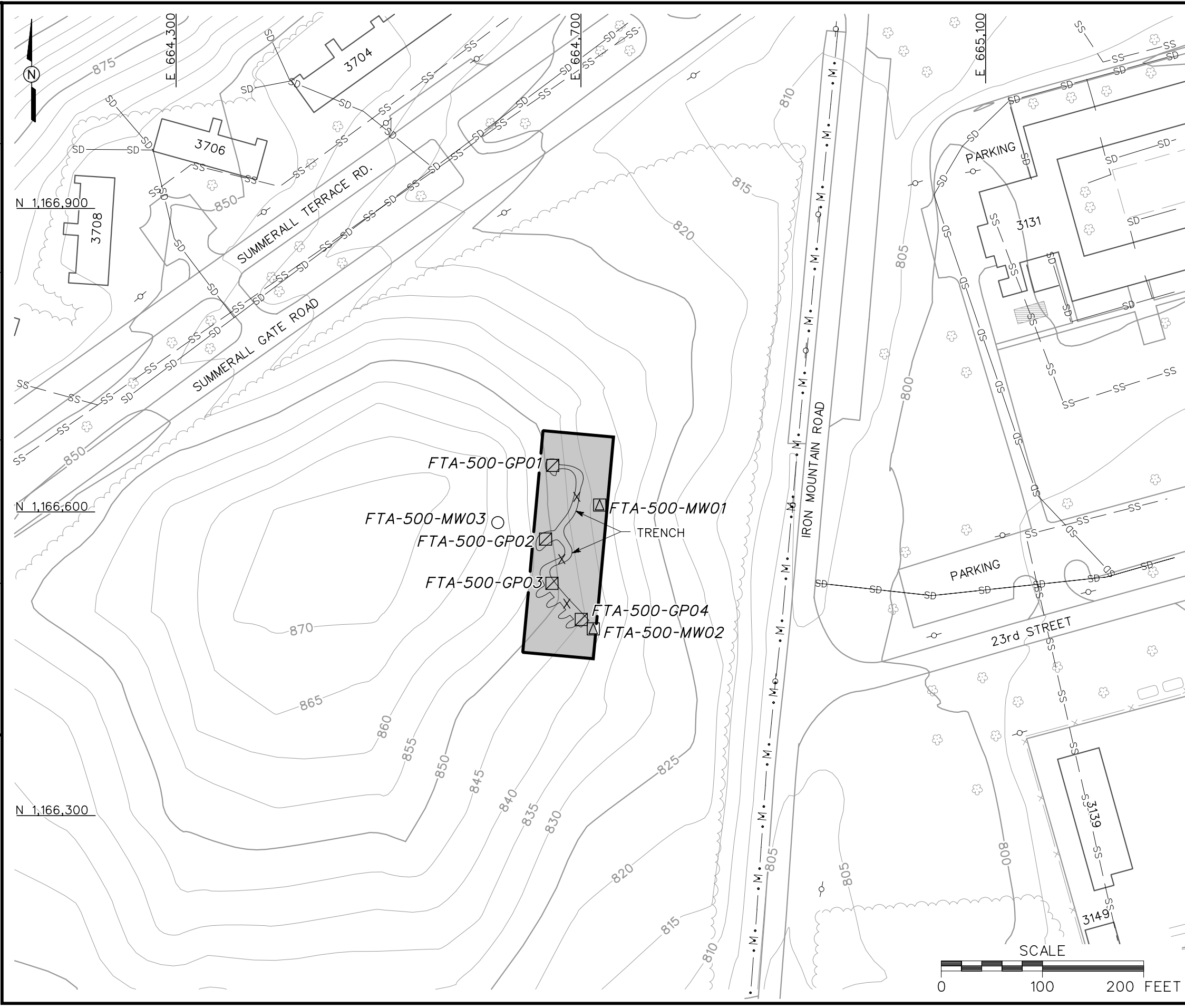
4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is listed in Table 4-1. Subsurface soil samples to be collected are listed in Table 4-2. The final soil boring sampling locations will be determined in the field by the on-site geologist, based on actual field observations and utility clearance results.

Table 4-1

**Sample Locations And Rationale
Trenches West of Iron Mountain Road, Parcel 500(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
FTA-500-GP01	Surface soil and subsurface soil	Surface soil and subsurface soil sample location to be placed in the northwest end of the Trenches West of Iron Mountain Road. Sample data will indicate if contaminated surface soil exists in the trenches and if contaminant releases into the environment have occurred at this section of the trenches.
FTA-500-GP02	Surface soil and subsurface soil	Surface soil sample location to be placed in the mid-section of the Trenches West of Iron Mountain Road. Sample data will indicate if contaminated surface soil exists in the trenches and if contaminant releases into the environment have occurred at this section of the trenches.
FTA-500-GP03	Surface soil and subsurface soil	Surface soil sample location to be placed in the mid-section of the Trenches West of Iron Mountain Road. Sample data will indicate if contaminated surface soil exists in the trenches and if contaminant releases into the environment have occurred at this section of the trenches.
FTA-500-GP04	Surface soil and subsurface soil	Surface and subsurface soil sample location to be placed in the southeast end of the Trenches West of Iron Mountain Road. Sample data will indicate if contaminated surface soil exists in the trenches and if contaminant releases into the environment have occurred at this section of the trenches.
FTA-500-MW01	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the northeast section and downgradient of the Trenches West of Iron Mountain Road. Sample data will indicate if contaminant releases into the environment have occurred from use of these trenches and if contaminated soil exists at this site. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-500-MW02	Surface soil, subsurface soil, and groundwater	Soil boring for surface soil, subsurface soil, and groundwater samples to be placed at the southeast section and downgradient of the Trenches West of Iron Mountain Road. Sample data will indicate if contaminant releases into the environment have occurred from use of these trenches and if contaminated soil exists at this site. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
FTA-500-MW03	Groundwater	Soil boring for groundwater sample to be placed west of the trenches and upgradient. Sample data will indicate if contaminant releases have occurred upgradient of the trenches. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.



LEGEND

UNIMPROVED ROADS AND PARKING

PAVED ROADS AND PARKING

BUILDING

TOPOGRAPHIC CONTOURS

TREES / TREELINE

PARCEL BOUNDARY

FENCE

UTILITY POLE

SANITARY SEWER LINE

STORM DRAINAGE LINE

PROPOSED RESIDUUM MONITORING WELL LOCATION

PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION

PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE LOCATION

PROPOSED EXCAVATION LOCATION WITH SHOVELS TO DETERMINE IF FILL MATERIAL EXISTS

FIGURE 4-1

PROPOSED SAMPLE LOCATION TRENCHES WEST OF IRON MOUNTAIN ROAD PARCEL 500(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT

IT CORPORATION

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Table 4-2

**Surface Soil and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Trenches West of Iron Mountain Road, Parcel 500(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-500-GP01	FTA-500-GP01-SS-CG0001-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
	FTA-500-GP01-DS-CG0002-REG	a				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
FTA-500-GP02	FTA-500-GP02-SS-CG0003-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
	FTA-500-GP02-DS-CG0004-REG	a				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
FTA-500-GP03	FTA-500-GP03-SS-CG0005-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
	FTA-500-GP03-DS-CG0006-REG	a				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
FTA-500-GP04	FTA-500-GP04-SS-CG0007-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
	FTA-500-GP04-DS-CG0008-REG	a				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
FTA-500-MW01	FTA-500-MW01-SS-CG0009-REG	0-1			FTA-500-MW01-SS-CG0009-MS FTA-500-MW01-SS-CG0009-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
	FTA-500-MW01-DS-CG0010-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
FTA-500-MW02	FTA-500-MW02-SS-CG0011-REG	a	FTA-500-MW02-SS-CG0012-FD	FTA-500-MW02-SS-CG0013-FS		TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
	FTA-500-MW02-SS-CG-0014-REG	a				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives

^a Actual sample depth selected for analysis will be at the discretion of the site geologist and will be based on field observation.

QA/QC - Quality assurance/quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

REG - Field sample.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a).

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings exceeding background (readings in ambient air). Typically, the subsurface soil sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples indicate readings exceeding background using the PID, the deepest interval from the soil boring will be sampled and submitted to the laboratory for analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight to the existence of any PSSCs.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Residuum Monitoring Wells

Three residuum monitoring wells will be installed at the Trenches West of Iron Mountain Road, Parcel 500(7) site. The residuum monitoring well locations are shown on Figure 4-1. The rationale for the monitoring well locations are presented in Table 4-1. The monitoring well boreholes will be drilled to the top of bedrock using a truck-mounted hollow-stem auger drill rig. Depth to bedrock is approximately 10 to 20 feet bgs at the site. The monitoring well casing will consist of new 2-inch inside-diameter, Schedule 40, threaded, flush-joint, polyvinyl chloride (PVC) pipe. Attached to the bottom of the well casing will be a section of new threaded, flush-joint, 0.010-inch continuous wrap PVC well screen, approximately 10 feet long.

Soil samples for analysis will be collected as described in Section 4.2.2.2. The samples will be collected for lithology using a 24-inch-long, 2-inch-or-larger-diameter, split-spoon sampler. All soil borings will be logged in accordance with American Standard for Testing and Materials Method D 2488 using the Unified Soil Classification System. All soil samples will be screened in the field using a PID. The permanent monitoring wells will be drilled and installed as specified in Section 4.8 and Appendix C of the SAP. The exact monitoring well locations will be determined in the field by the on-site geologist, based on actual field conditions.

4.2.4 Groundwater Sampling

Groundwater samples will be collected from the three residuum monitoring wells completed at the Trenches West of Iron Mountain Road site presented in Section 4.2.3.

4.2.4.1 Sample Locations and Rationale

Groundwater samples will be collected from the residuum monitoring well locations shown on Figure 4-1. The groundwater sampling rationale is listed in Table 4-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3.

4.2.4.2 Sample Collection

Prior to sampling monitoring wells, static water levels will be measured from each of the four monitoring wells installed at the site to define the groundwater flow in the residuum aquifer. Water level measurements will be performed as outlined in Section 4.18 of the SAP (IT, 1998a). Groundwater samples will be collected in accordance with the procedures outlined in Section 4.9.1.4 of the SAP.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP (IT, 1998a). The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.5 Investigation for Fill Material in the Trenches

Three locations in the trenches will be manually excavated with a shovel and/or a posthole digger to determine if fill material exists in the trenches (Figure 4-1). The maximum depth of each excavation will be 3 feet to identify if the trenches contain fill material. There will not be any samples collected for chemical analysis. The locations within the trenches to be excavated will be selected so that trench shoring is not required. Surface and downhole UXO surveys will

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Trenches West of Iron Mountain Road, Parcel 500(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
FTA-500-MW01	FTA-500-MW01-GW-CG3001-REG	Groundwater	a			FTA-500-MW01-GW-CG3001-MS FTA-500-MW01-GW-CG3001-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
FTA-500-MW02	FTA-500-MW02-GW-CG3002-REG	Groundwater	a	FTA-500-MW02-GW-CG3003-FD	FTA-500-MW02-GW-CG3004-FS		TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives
FTA-500-MW03	FTA-500-MW03-GW-CG3005-REG	Groundwater	a				TCL VOCs, TCL SVOCs, TAL Metals, Nitroexplosives

^aSample depth will depend on where sufficient first water is encountered to collect a water sample.

QA/QC - Quality assurance/quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

REG - Field sample.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

be required as presented in Section 4.1 of this SFSP. The excavation materials will be placed back into the excavation after the excavation investigation is complete.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP.

Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum (NAD83), 1983. Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil sample locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use permanent monitoring wells to determine water levels, a higher level of accuracy is required. The monitoring wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP. All areas at this site must be cleared for UXO avoidance before any surveying activities will commence if outside areas cleared for sampling.

4.5 Analytical Program

Samples collected at locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based the history of site usage, as well as the EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Trenches West of Iron Mountain Road, Parcel 500(7), consist of the following list of analytical suites:

Table 4-4

**Analytical Samples
Site Investigation
Trenches West of Iron Mountain Road, Parcel 500(7)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab	
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis	
Trenches West of Iron Mountain Road: 3 water matrix samples(3 groundwater samples); 12 soil matrix samples(6 surface soil samples, 6 subsurface soil samples)														
TCL VOCs	8260B	water	normal	3	1	3	1	1	1	1	1	8	1	
TCL SVOCs	8270C	water	normal	3	1	3	1	1	1		1	7	1	
Tot TAL Metals	6010B/7000	water	normal	3	1	3	1	1	1		1	7	1	
Nitroexplosives	8330	water	normal	3	1	3	1	1	1		1	7	1	
TCL VOCs	8260B	soil	normal	12	1	12	1	1	1		1	16	1	
TCL SVOCs	8270C	soil	normal	12	1	12	1	1	1		1	16	1	
TAL Metals	6010B/7000	soil	normal	12	1	12	1	1	1		1	16	1	
Nitroexplosives	8330	soil	normal	12	1	12	1	1	1		1	16	1	
Trenches West of Iron Mountain Road Subtotal:							60	8	8	8	1	8	93	8

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples
are shipped to:

U.S. Army Engineer District, Savannah
Environmental & Materials District
Attn: Sample Receiving
200 North Cobb Parkway
Building 400, Suite 404
Marietta, Georgia 30062
Tel: 678-354-0310

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000
- Nitroexplosives - Method 8330

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Attn: John Reynolds
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

QA split samples collected for the USACE laboratory will be shipped to the following address:

U.S. Army Engineer District, Savannah
Environmental & Materials Unit
Attn: Sample Receiving
200 North Cobb Parkway
Building 400, Suite 404
Marietta, Georgia 30062
Telephone: (678) 354-0310.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP. The IDW expected to be generated at the Trenches West of Iron Mountain Road, Parcel 500(7) site will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.8 Site-Specific Safety and Health

Health and safety requirements for this SI are provided in the SSHP attachment for the Trenches West of Iron Mountain Road, Parcel 500(7) site. The SSHP attachment will be used in conjunction with the installation-wide SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team and will be in accordance with the WP.

6.0 References

Environmental Science and Engineering, Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, ***Fort McClellan Comprehensive Reuse Plan***, Fort McClellan Reuse and Redevelopment Authority of Alabama, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August.

U.S. Army Corps of Engineers (USACE), 1999, ***Statement of Work for Task Order CK05, Modification No. 0005, Site Investigations at Fort McClellan, Alabama***, January.

U.S. Army Corps of Engineers (USACE), 1998, ***Archives Search Report, Maps, Fort McClellan, Anniston, Alabama***, June.

U.S. Army Corps of Engineers (USACE), 1994, ***Requirements for the Preparation of Sampling and Analysis Plan***, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture (USDA), 1961, ***Soil Survey, Calhoun County, Alabama***, Soil Conservation Service, Series 1958, No. 9, September 1961.

U.S. Environmental Protection Agency (EPA), 1993, ***Data Quality Objectives Process for Superfund, Interim Final Guidance***, EPA 540-R-93-071, September.